

HOW TO DRAW

ARTEMIS

NASA'S DEEP SPACE NETWORK (DSN) ANTENNA

LARGEST AND
MOST SENSITIVE
SCIENTIFIC
TELECOMMUNICATIONS
SYSTEM IN THE WORLD

OPERATED BY
NASA'S JET
PROPULSION
LABORATORY

SUPPORTS
MISSIONS THAT
EXPLORE THE
FURTHEST POINTS
OF OUR SOLAR
SYSTEM

PROVIDES RADAR AND
RADIO ASTRONOMY
OBSERVATIONS THAT
IMPROVE OUR
UNDERSTANDING OF THE
SOLAR SYSTEM AND THE
LARGER UNIVERSE

National Aeronautics and
Space Administration





WE ARE GOING!

WITH THE *ARTEMIS* PROGRAM, NASA WILL LAND THE FIRST WOMAN AND NEXT MAN ON THE MOON BY 2024, USING INNOVATIVE TECHNOLOGIES TO EXPLORE MORE OF THE LUNAR SURFACE THAN EVER BEFORE.

LEARN MORE: [NASA.GOV/ARTEMIS](https://www.nasa.gov/artemis)



THE SPACE LAUNCH SYSTEM
WORLD'S MOST POWERFUL ROCKET



THE GATEWAY
OUTPOST ORBITING THE MOON



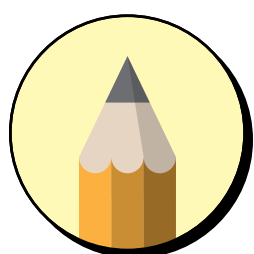
ORION SPACECRAFT
DESIGNED FOR DEEP SPACE



ARTEMIS GENERATION
SPACE SUITS

1. LET'S DRAW THE DSN ANTENNA!

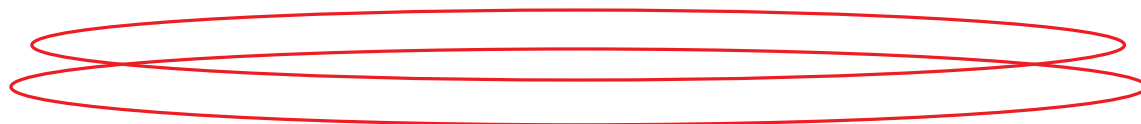
THIS ACTIVITY REQUIRES A *PENCIL* AND A *BLACK PEN* OR A *MARKER*. YOU WILL USE THE PENCIL TO DRAW THE GUIDELINES AND THE MARKER TO DRAW THE FINAL SHAPES. FOR EVERY STEP, THE CURRENT SHAPES TO BE DRAWN ARE SHOWN IN *RED*.



DRAW THESE SHAPES
USING A *PENCIL*



THE DSN ANTENNA CAN BE DRAWN USING SIMPLE, BASIC SHAPES. USING THE PENCIL, DRAW A LARGE, ELONGATED CIRCLE TO REPRESENT THE SHAPED-SURFACE REFLECTOR (THE GIANT DISH). DRAW TWO MORE CIRCLES AT THE BASE TO REPRESENT THE ROTATING AZIMUTH TRACK OF THE ANTENNA.



AZIMUTH TRACK



SUPPLY LIST

PENCIL WITH
ERASER

BLACK PEN OR
MARKER

SHEET OF PAPER



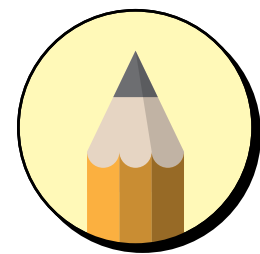
2. DRAW DISH AND BASE DETAILS

ADD ADDITIONAL CIRCLES TO THE DISH TO REPRESENT THE SHAPED-SURFACE SUBREFLECTOR AND THE OUTER FRAME OF THE DISH. CONTINUE TO ADD MORE DETAILS TO THE ANTENNA'S AZIMUTH TRACK.

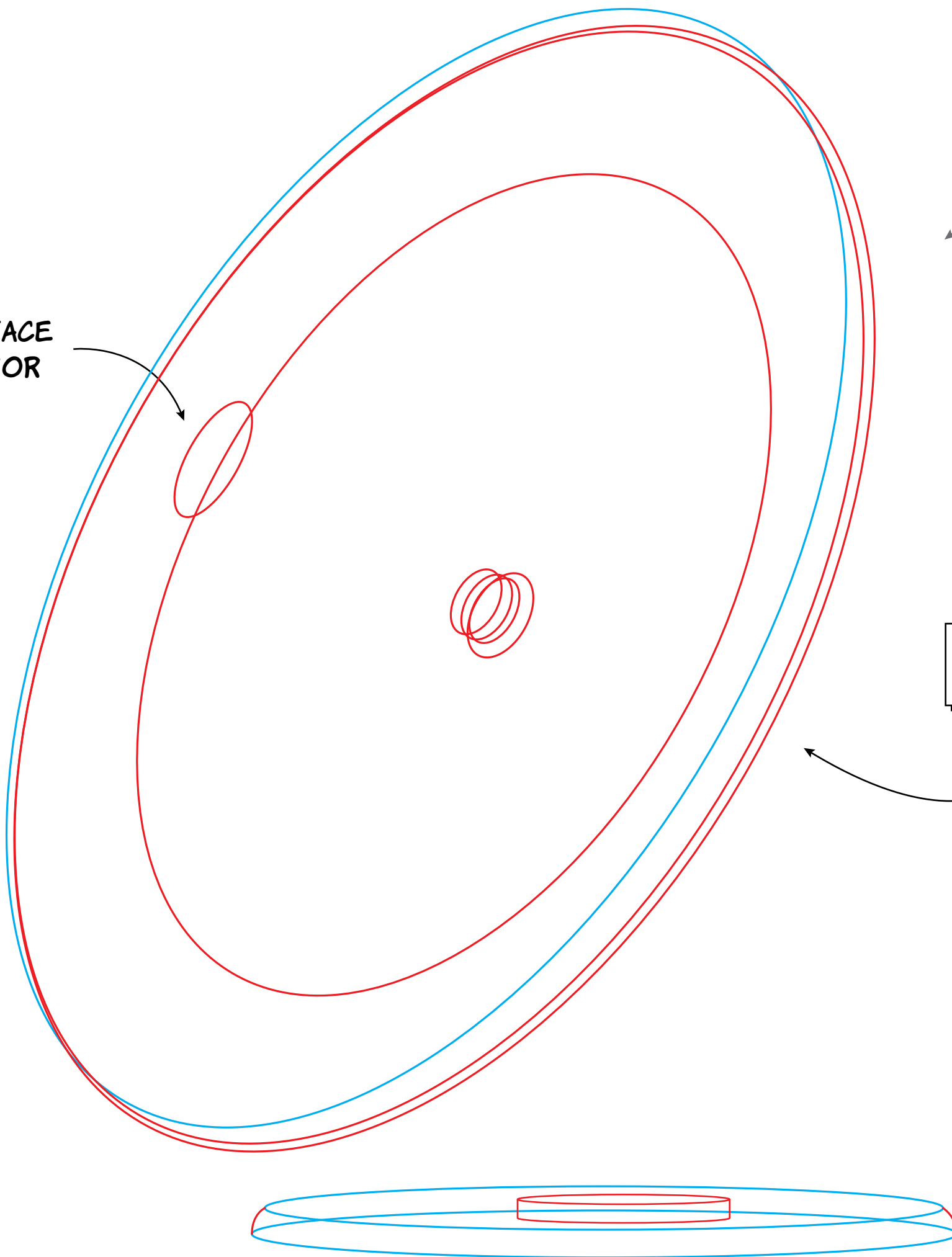
FUN FACT

THE DEEP SPACE NETWORK - OR DSN - IS NASA'S INTERNATIONAL ARRAY OF GIANT RADIO ANTENNAS THAT SUPPORTS INTERPLANETARY SPACECRAFT MISSIONS, PLUS A FEW THAT ORBIT EARTH.

SHAPED-SURFACE
SUBREFLECTOR



DRAW THESE SHAPES
USING A PENCIL

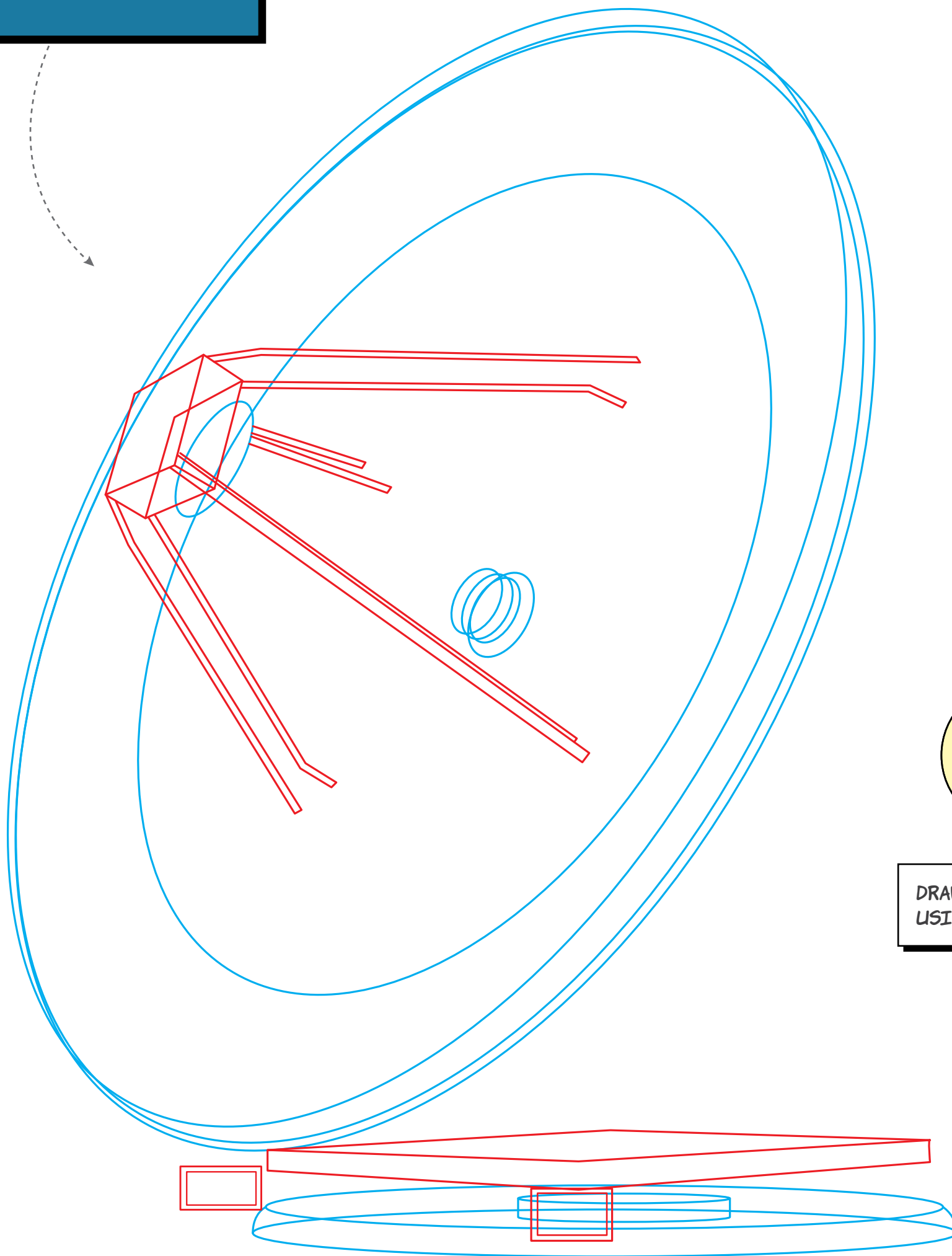


3. CONTINUE ADDING DETAILS

INSIDE THE LARGE DISH, ADD STRUCTURAL DETAILS AROUND THE SHAPED-SURFACE SUBREFLECTOR USING STRAIGHT AND RECTANGULAR SHAPES. ADD ANOTHER SERIES OF RECTANGULAR SHAPES TO REPRESENT THE BASE PLATFORM OF THE ANTENNA.

FUN FACT

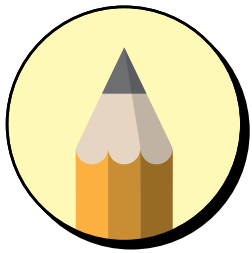
THE ANTENNAS MOVE AROUND IN AZIMUTH AND UP AND DOWN IN ELEVATION.



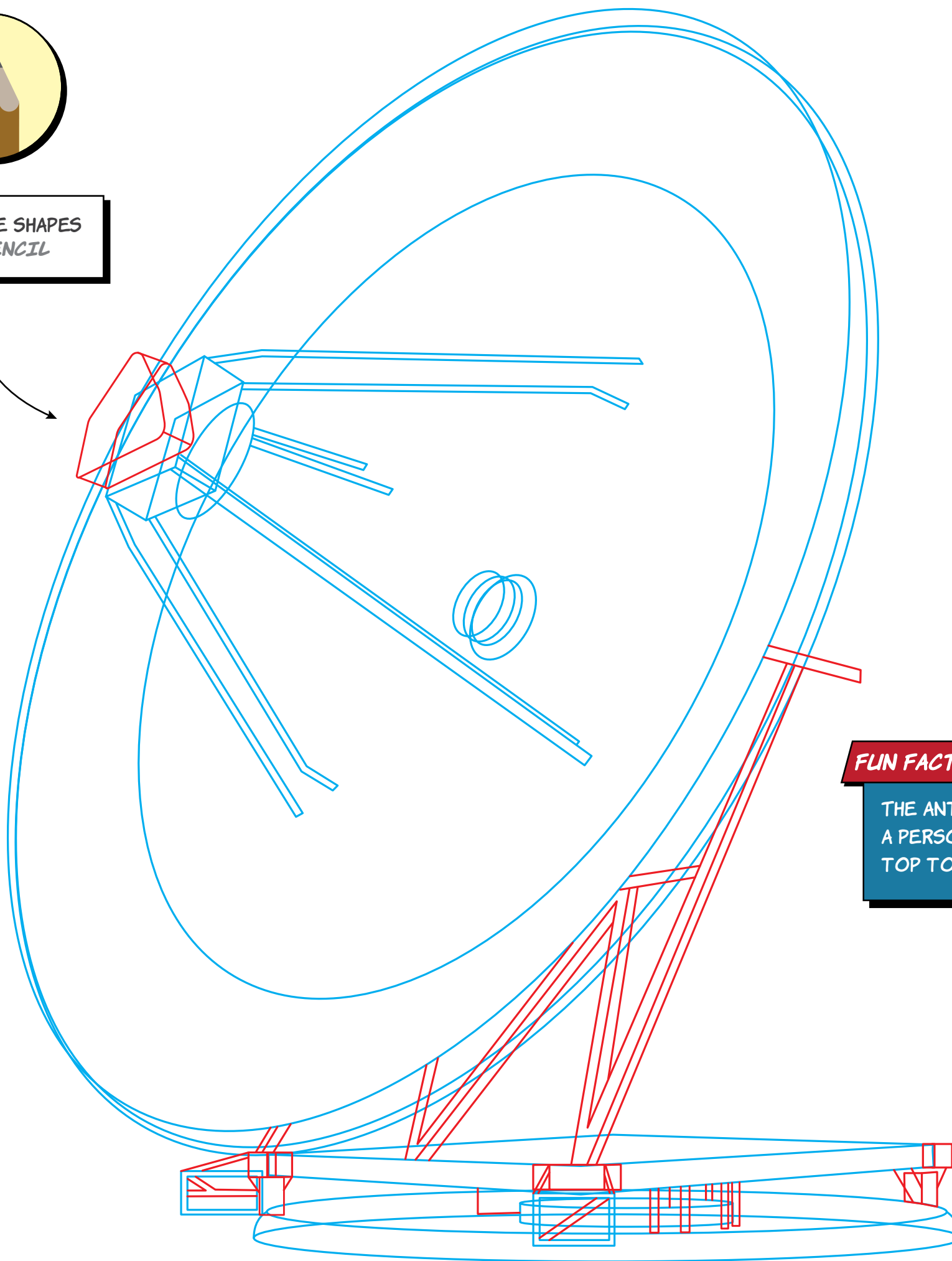
DRAW THESE SHAPES
USING A PENCIL

4. DRAW THE ANTENNA SUPPORT STRUCTURE

DRAW THE VERY TOP PIECE THAT SITS ABOVE THE SHAPED-SURFACE SUBREFLECTOR. BEGIN TO DRAW THE SUPPORT STRUCTURE THAT CONNECTS THE DISH TO THE BASE. YOU MAY WANT TO USE A RULER TO HELP WITH DRAWING THE LONG, STRAIGHT LINES.



DRAW THESE SHAPES USING A PENCIL



FUN FACT

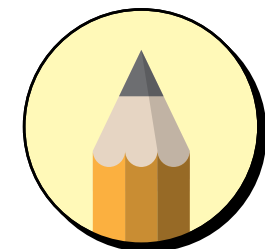
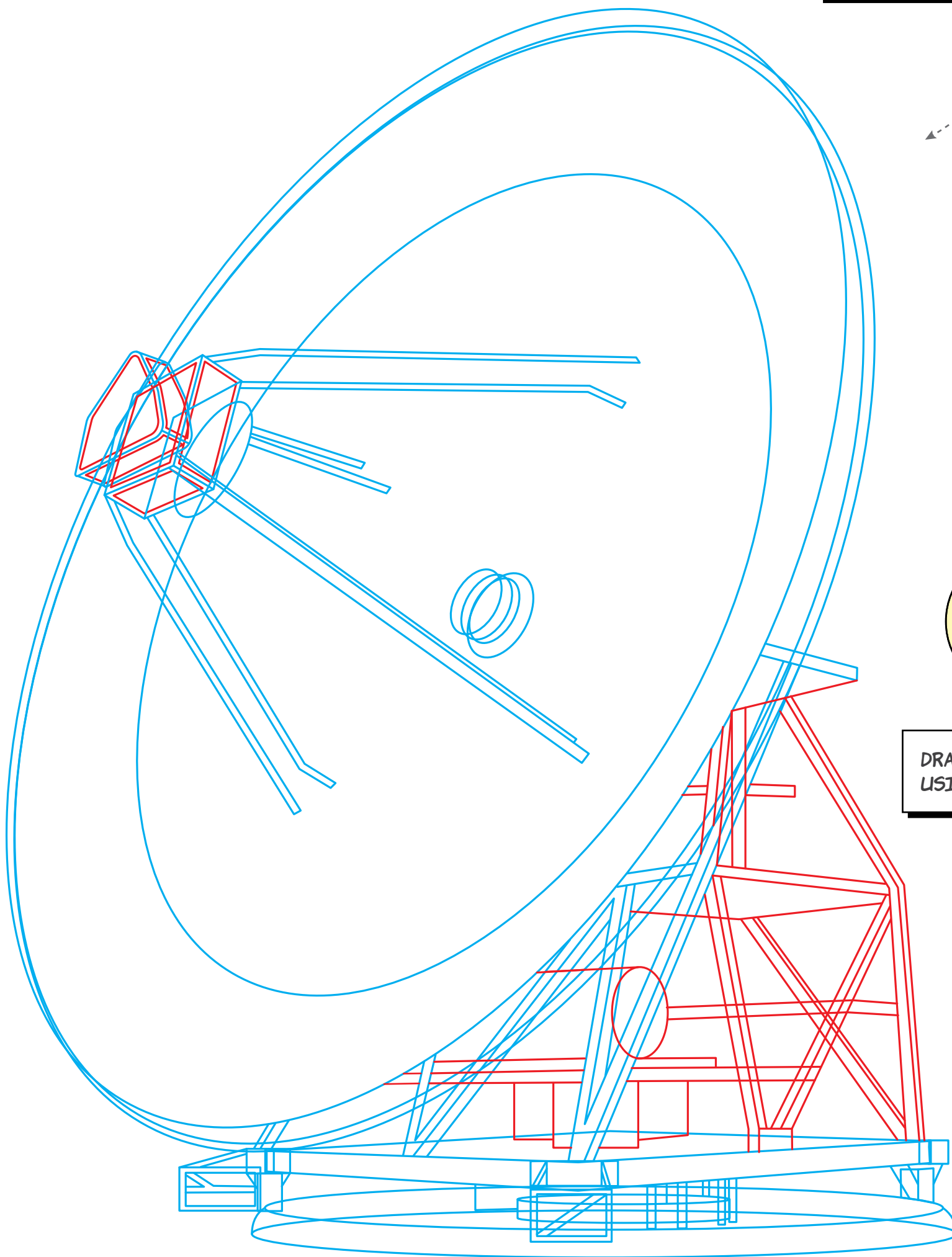
THE ANTENNAS MOVE ON THEIR OWN, BUT A PERSON MIGHT NEED TO CLIMB TO THE TOP TO MAKE A REPAIR.

5. CONTINUE TO ADD TO SUPPORT STRUCTURE

CONTINUE ADDING STRUCTURAL BEAMS AND PLATFORMS TO THE ANTENNA.

FUN FACT

THE DSN HAS THREE GROUND STATIONS LOCATED APPROXIMATELY 120 DEGREES APART ON EARTH TO ENSURE THAT ANY SATELLITE IN DEEP SPACE IS ABLE TO COMMUNICATE WITH AT LEAST ONE STATION AT ALL TIMES.



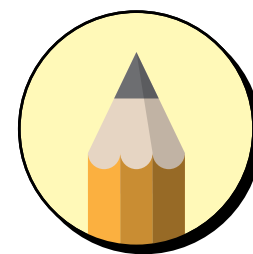
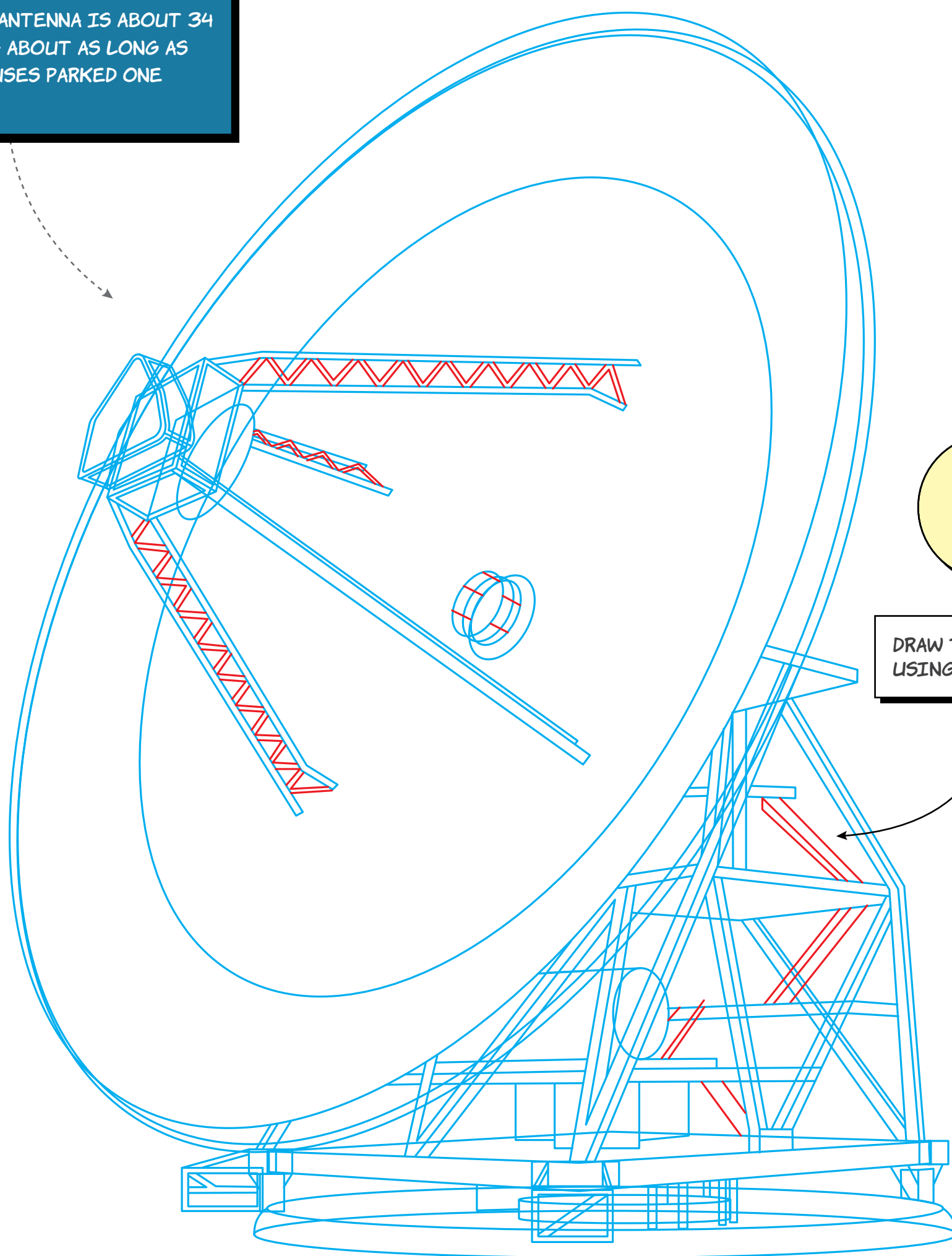
DRAW THESE SHAPES
USING A PENCIL

6. DRAW SMALLER DETAILS

DRAW THE SMALLER DETAILS THROUGHOUT THE ENTIRE STRUCTURE INCLUDING INSIDE THE DISH AND THE STAIRCASES THAT GO FROM ONE PLATFORM TO THE NEXT.

FUN FACT

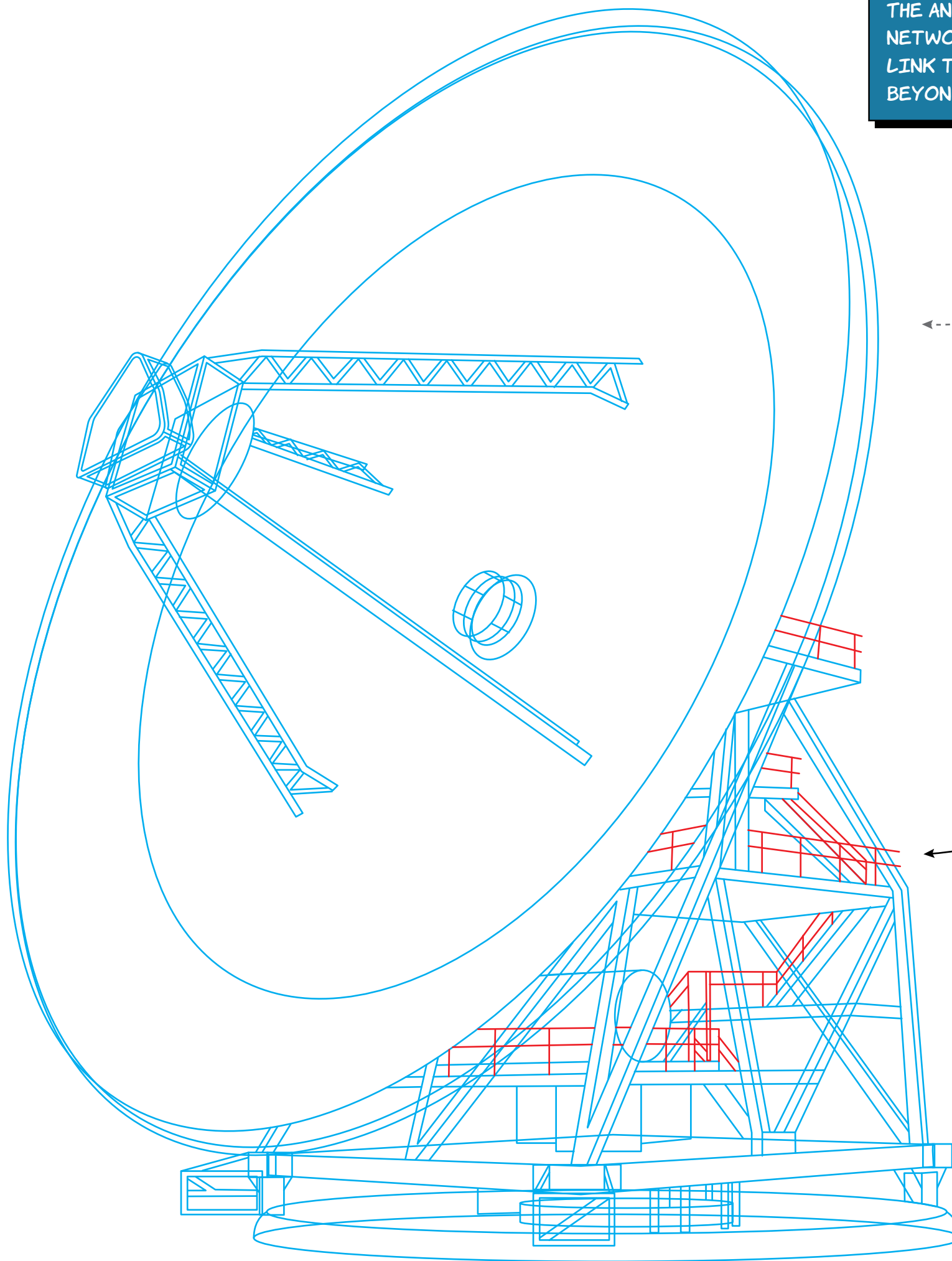
THE DISH OF THE ANTENNA IS ABOUT 34 METERS ACROSS - ABOUT AS LONG AS THREE SCHOOL BUSES PARKED ONE AFTER ANOTHER!



DRAW THESE SHAPES
USING A PENCIL

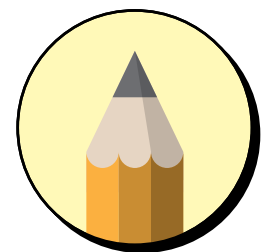
7. ADD FINAL TOUCHES

COMPLETE THE STAIRCASES BY DRAWING ALL OF THE RAILINGS ON EACH PLATFORM.



FUN FACT

THE ANTENNAS OF THE DEEP SPACE NETWORK ARE THE INDISPENSABLE LINK TO EXPLORERS VENTURING BEYOND EARTH.



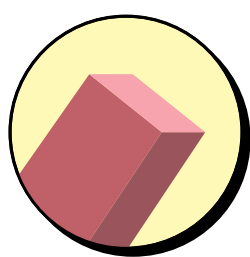
DRAW THESE SHAPES
USING A PENCIL

8. INK OUTLINES AND ERASE GUIDELINES

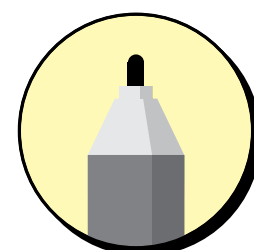
INK THE FINAL OUTLINES AND ERASE ALL PENCIL GUIDELINES. YOU'RE NOW READY TO ADD SHADING OR COLOR!

FUN FACT

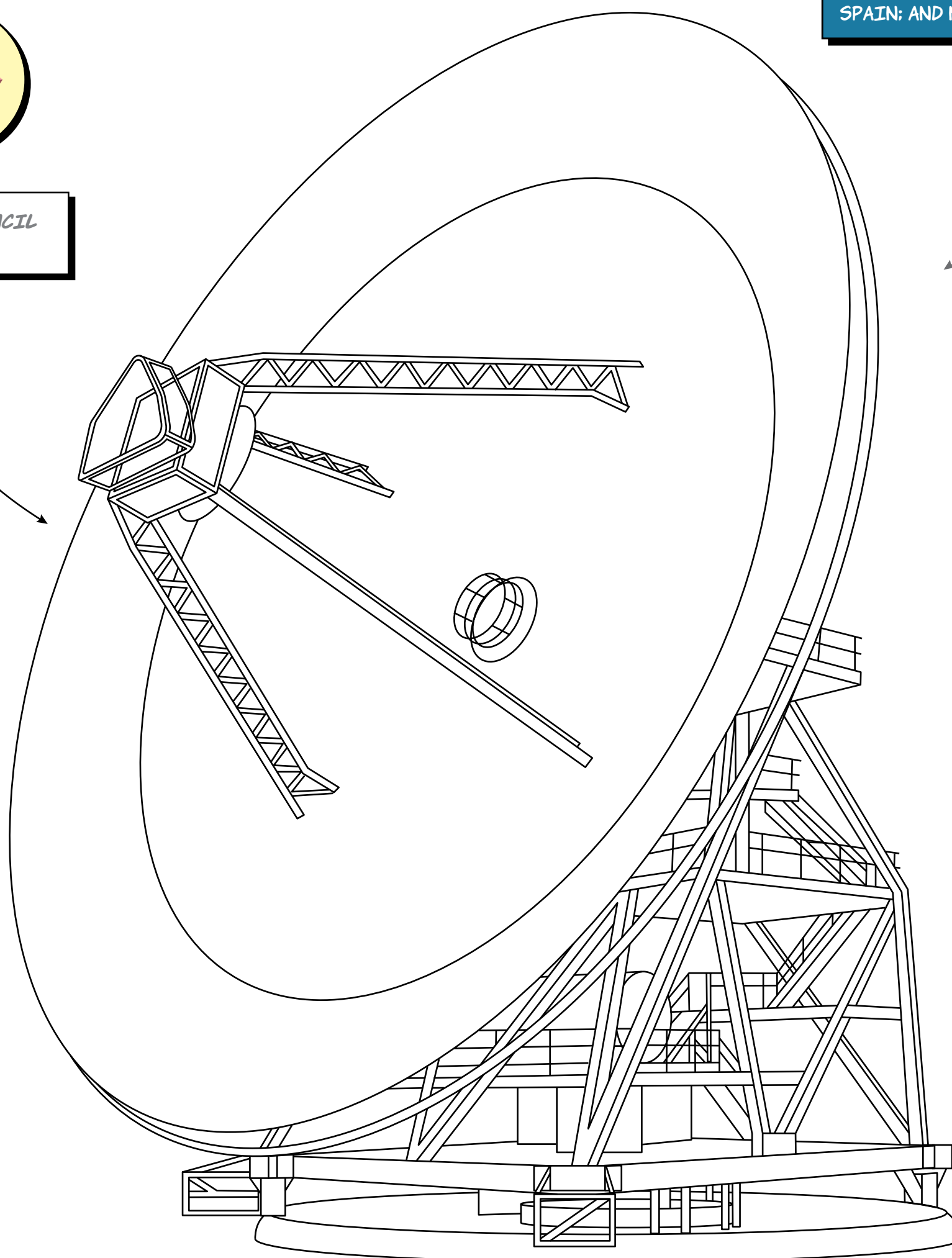
THE THREE GROUND LOCATIONS OF THE DSN ARE LOCATED AT GOLDSTONE, NEAR BARSTOW, CALIFORNIA; NEAR MADRID, SPAIN; AND NEAR CANBERRA, AUSTRALIA.



ERASE THE *PENCIL* LINES



DRAW THESE SHAPES USING A *BLACK PEN*



9. SHARE YOUR MASTERPIECE!

MAKE IT YOUR OWN! ADD EXCITING COLORS, EXTRA DETAILS, OR EVEN DRAW THE ANTENNA COMMUNICATING WITH A SATELLITE.

DON'T FORGET TO SHARE YOUR MASTERPIECE ON SOCIAL MEDIA!

#DRAWARTEMIS

ARTIST HINT:
USE THE IMAGE ON
THE FRONT COVER
AS A REFERENCE
FOR SMALL
DETAILS, COLORS,
AND TEXTURES.

